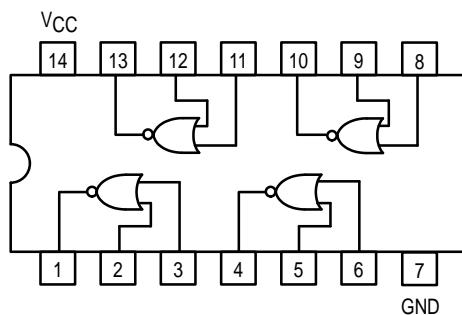
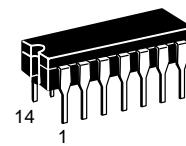
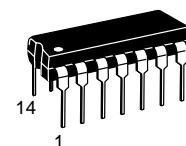
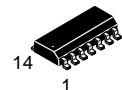


**QUAD 2-INPUT NOR BUFFER**
**SN54/74LS28**

**QUAD 2-INPUT NOR BUFFER**  
**LOW POWER SCHOTTKY**

**J SUFFIX**  
**CERAMIC**  
**CASE 632-08**

**N SUFFIX**  
**PLASTIC**  
**CASE 646-06**

**D SUFFIX**  
**SOIC**  
**CASE 751A-02**
**ORDERING INFORMATION**

SN54LSXXJ	Ceramic
SN74LSXXN	Plastic
SN74LSXXD	SOIC

**GUARANTEED OPERATING RANGES**

Symbol	Parameter		Min	Typ	Max	Unit
V <sub>CC</sub>	Supply Voltage	54 74	4.5 4.75	5.0 5.0	5.5 5.25	V
T <sub>A</sub>	Operating Ambient Temperature Range	54 74	-55 0	25 25	125 70	°C
I <sub>OH</sub>	Output Current — High	54, 74			-1.2	mA
I <sub>OL</sub>	Output Current — Low	54 74			12 24	mA

# SN54/74LS28

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions
		Min	Typ	Max		
$V_{IH}$	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs
$V_{IL}$	Input LOW Voltage	54		0.7	V	Guaranteed Input LOW Voltage for All Inputs
		74		0.8		
$V_{IK}$	Input Clamp Diode Voltage		-0.65	-1.5	V	$V_{CC} = \text{MIN}$ , $I_{IN} = -18 \text{ mA}$
$V_{OH}$	Output HIGH Voltage	54	2.5	3.5	V	$V_{CC} = \text{MIN}$ , $I_{OH} = \text{MAX}$ , $V_{IN} = V_{IH}$ or $V_{IL}$ per Truth Table
		74	2.7	3.5	V	
$V_{OL}$	Output LOW Voltage	54, 74		0.25	V	$I_{OL} = 12 \text{ mA}$
		74		0.35	V	$I_{OL} = 24 \text{ mA}$
$I_{IH}$	Input HIGH Current			20	$\mu\text{A}$	$V_{CC} = \text{MAX}$ , $V_{IN} = 2.7 \text{ V}$
				0.1	mA	$V_{CC} = \text{MAX}$ , $V_{IN} = 7.0 \text{ V}$
$I_{IL}$	Input LOW Current			-0.4	mA	$V_{CC} = \text{MAX}$ , $V_{IN} = 0.4 \text{ V}$
$I_{OS}$	Short Circuit Current (Note 1)	-30		-130	mA	$V_{CC} = \text{MAX}$
$I_{CC}$	Power Supply Current Total, Output HIGH Total, Output LOW			3.6	mA	$V_{CC} = \text{MAX}$
				13.8		

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

## AC CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

Symbol	Parameter	Limits			Unit	Test Conditions
		Min	Typ	Max		
$t_{PLH}$	Propagation Delay		12	24	ns	$V_{CC} = 5.0 \text{ V}$ $C_L = 45 \text{ pF}$ , $R_L = 667 \Omega$
$t_{PHL}$	Propagation Delay		12	24	ns	